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(57) 【要約】

(57) [Abstract]

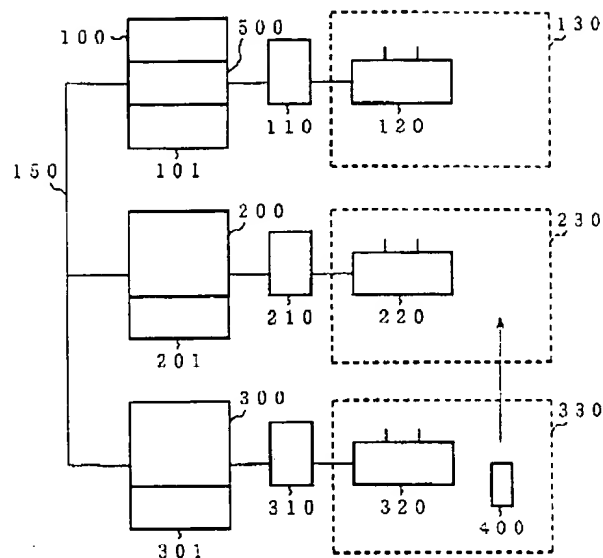
【課題】 私設総合サービス網内の不要な信号処理数が増し、私設総合サービス網全体のトラフィックを高くし、単位時間当たりに処理できる私設総合サービス網内の発着信処理数を低くするなどの課題があった。

[Problem] There was a or other problem which makes number of send/receive processes inside private common user network where the amount of unnecessary signal processing inside private common user network increases, makes traffic of private common user network entirety high, can treat in per unit time low.

【解決手段】 携帯無線電話機が他のサービスエリア 230 に移動し、ビジュ局構内交換機 200 からの情報取得要求信号を受信したホーム局構内交換機 100 は、ビジュ局構内交換機 200 の保有する認証演算アルゴリズムを識別し、自己の保有するものと同じであることを検出した場合に、ビジュ局構内交換機 200 に対して交換機間認証シーケンスが不要である旨を情報取得応答信号により返送するものである。

[Means of Solution] Portable wireless telephone moves to other service area 230, home station in-house switching equipment 100 which receives information acquisition request from visitor station in-house switching equipment 200 identifies authentication algorithm which visitor station in-house switching equipment 200 possesses, when the fact that it is same as those which self possesses is detected, it is something which sends back effect where authentication sequence between switching equipment is unnecessary vis-a-vis visitor station in-house switching equipment 200 with information acquisition

response .



100 : ホーム局構内交換機  
 101 : ホームロケーションレジスタ  
 130, 230, 330 : サービスエリア  
 150 : 通信回線  
 200, 300 : デジタル局構内交換機  
 400 : 携帯無線電話機  
 500 : 網内構内交換機属性テーブル

## 【特許請求の範囲】

【請求項1】 ホーム局構内交換機とデジタル局構内交換機を通信回線で相互接続し、上記ホーム局構内交換機及び上記デジタル局構内交換機がそれぞれ分担するサービスエリア内での発着呼の自動接続を可能とする携帯無線電話機の広域ローミング認証装置において、上記ホーム局構内交換機は、上記携帯無線電話機に関する情報を保持するホームロケーションレジスタと上記全デジタル局構内交換機の各デジタル局情報種別を設定したデジタル局情報種別保持手段とを備え、上記携帯無線電話機の移動先である上記デジタル局構内交換機のデジタル局情報種別と自己のデジタル局情報種別とが同一であれば、上記携帯無線電話機の移動先である上記デジタル局構内交換機に対して交換機間認証シナリオを実施するか否かを指示することを特徴とする携帯無線電話機の広域ローミング認証装置。

## [Claim(s)]

[Claim 1] In wide area roaming authentication equipment of portable wireless telephone which interconnects home station in-house switching equipment and visitor station in-house switching equipment with communication circuit, makes above-mentioned home station in-house switching equipment and automatic connection of the calling inside service area which above-mentioned visitor station in-house switching equipment does division respectively possible, as for above-mentioned home station in-house switching equipment, home location register which keeps information regarding above-mentioned portable wireless telephone, visitor station information type grasping means which sets each visitor station information type of above-mentioned all visitor station in-house switching equipment having, If visitor station information type of above-mentioned visitor station in-house switching equipment which is a movement destination of the above-mentioned portable wireless telephone and visitor station information type of self are same, it designates that whether or not which executes authentication scenario between switching equipment vis-a-vis above-mentioned visitor station in-house switching equipment which is a movement destination of the above-mentioned portable wireless telephone, is indicated as feature, wide area roaming authentication equipment of the portable wireless telephone.

【請求項2】 ホーム局構内交換機とビジタ局構内交換機を通信回線で相互接続し、上記ホーム局構内交換機及び上記ビジタ局構内交換機がそれぞれ分担するサービスエリア内での発着呼の自動接続を可能とする携帯無線電話機の広域ローミング認証方法において、上記ビジタ局構内交換機では、他の上記サービスエリア内から自己が分担するサービスエリア内に上記携帯無線電話機が移動してきたとき、この携帯無線電話機の上記ホーム局構内交換機を識別し、上記ホーム局構内交換機に対して上記携帯無線電話機の情報要求し、上記ホーム局構内交換機では、上記携帯無線電話機に関する情報をホームロケーションレジスタから読み出すとともに、上記全ビジタ局構内交換機の各ビジタ局情報種別を設定したビジタ局情報種別保持手段から上記携帯無線電話機の移動先である上記ビジタ局構内交換機の情報要求し、自己のビジタ局情報種別と同一であれば、上記携帯無線電話機の移動先である上記ビジタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示することを特徴とする携帯無線電話機の広域ローミング認証方法。

[Claim 2] Home station in-house switching equipment and visitor station in-house switching equipment with communication circuit interconnect to do, In wide area roaming authentication method of portable wireless telephone which makes above-mentioned home station in-house switching equipment and the automatic connection of calling inside service area which above-mentioned visitor station in-house switching equipment does division respectively possible putting, With above-mentioned visitor station in-house switching equipment, self above-mentioned portable wireless telephone moved inside service area which the division is done from inside other above-mentioned service area time, Above-mentioned home station in-house switching equipment of this portable wireless telephone is identified, information of above-mentioned portable wireless telephone is required vis-a-vis the above-mentioned home station in-house switching equipment, With above-mentioned home station in-house switching equipment, information regarding above-mentioned portable wireless telephone is read out from the home location register as, If information of above-mentioned visitor station in-house switching equipment which is a movement destination of the above-mentioned portable wireless telephone from visitor station information type grasping means which sets each visitor station information type of the above-mentioned all visitor station in-house switching equipment is required and it is same as visitor station information type of self, it designates that whether or not which executes authentication scenario between switching equipment vis-a-vis above-mentioned visitor station in-house switching equipment which is a movement destination of above-mentioned portable wireless telephone, is indicated as feature, wide area roaming authentication method of the portable wireless telephone.

【請求項3】 ホーム局構内交換機とビジタ局構内交換機を通信回線で相互接続し、上記ホーム局構内交換機及び上記ビジタ局構内交換機がそれぞれ分担するサービスエリア内での発着呼の自動接続を可能とする携帯無線電話機の広域ローミング認証方法において、上記ビジタ局構内交換機では、他の上記サービスエリア内から自己が分担するサービスエリア内に上記携帯無線電話機が移動してきたとき、この携帯無線電話機の上記ホーム局構内交換機を識別し、上記ホーム局構内交換機に対して上記携帯無線電話機の情報取得要求時に、ビジタ局情報種別保持手段から上記携帯無線電話機の移動先である上記ビジタ局構内交換機のビジタ局情報種別を要求し、上記ホーム局構内交換機では、上記携帯無線電話機に関する情報をホームロケーションレジスタから読み出すと同時に、上記情報取得要求信号内に含まれた上記携帯無線電話機の移動先である上記ビジタ局構内交換機に関する上記ビジタ局情報種別を検出し、自己のビジタ局情報種別と同一であれば、上記携帯無線電話機の移動先である上記ビジタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示することを特徴とする携帯無線電話機の広域ローミング認証方法

[Claim 3] Home station in-house switching equipment and visitor station in-house switching equipment with communication circuit interconnect to do, In wide area roaming authentication method of portable wireless telephone which makes above-mentioned home station in-house switching equipment and the automatic connection of calling inside service area which above-mentioned visitor station in-house switching equipment does division respectively possible putting, With above-mentioned visitor station in-house switching equipment, self above-mentioned portable wireless telephone moved inside service area which the division is done from inside other above-mentioned service area time, Above-mentioned home station in-house switching equipment of this portable wireless telephone is identified, Vis-a-vis above-mentioned home station in-house switching equipment at a time of information acquisition request of the above-mentioned portable wireless telephone, visitor station information type of above-mentioned visitor station in-house switching equipment which is a movement destination of the above-mentioned portable wireless telephone

【請求項４】 ビジタ局情報種別保持手段は、網内構内交換機属性テーブルに全ビジタ局構内交換機の認証演算アルゴリズム種別を設定したものであることを特徴とする請求項１から請求項３のうちのいずれか１項記載の携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法。

【請求項５】 網内構内交換機属性テーブルに全ビジタ局構内交換機のメーカー種別を設定したことを特徴とする請求項４記載の携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法。

【請求項６】 網内構内交換機属性テーブルに全ビジタ局構内交換機のスタンダード標準化委員会の第２８班のバージョン種別およびメーカー種別を設定したことを特徴とする請求項４記載の携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法。

【請求項７】 網内構内交換機属性テーブルに全ビジタ局構内交換機の認証シナリオ種別を設定したことを特徴とする請求項４記載の携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法。

【発明の詳細な説明】

【０００１】

from visitor station information type grasping means is required, With above-mentioned home station in-house switching equipment, When information regarding above-mentioned portable wireless telephone is read out from the home location register to simultaneously, If above-mentioned visitor station information type regarding above-mentioned visitor station in-house switching equipment which is a movement destination of above-mentioned portable wireless telephone which is included inside the above-mentioned information acquisition request is detected and it is same as visitor station information type of the self, it designates that whether or not which executes authentication scenario between switching equipment vis-a-vis above-mentioned visitor station in-house switching equipment which is a movement destination of above-mentioned portable wireless telephone, is indicated as feature, wide area roaming authentication method of the portable wireless telephone.

[Claim 4] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone where visitor station information type grasping means designates that it is something which sets authentication algorithm type of all visitor station in-house switching equipment to intranetwork switching equipment attribute table as feature, states in any one claim among Claim 1 through Claim 3.

[Claim 5] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which designates that manufacturer type of all visitor station in-house switching equipment is set to intranetwork switching equipment attribute table as feature, states in Claim 4.

[Claim 6] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which designates version type of the 28th group of standardization committee of all visitor station in-house switching equipment and that manufacturer type is set as feature in intranetwork switching equipment attribute table, states in Claim 4.

[Claim 7] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which designates that authentication scenario type of all visitor station in-house switching equipment is set to intranetwork switching equipment attribute table as feature, states in Claim 4.

[Description of the Invention]

[0001]

【発明の属する技術分野】この発明は、常にホーム局構内交換機およびビクタ局構内交換機間認証を起動することなく、私設総合サービス網内の信号処理数を低減しトラフィックを低くすることができる携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法に関するものである。

【0002】

【従来の技術】図10は、例えば特開平8-237727号公報に記載された従来の携帯無線電話機の広域ローミング認証装置の概要を示す構成図であり、図において、100は携帯無線電話機400に対して位置登録、発信、着信等の広域ローミングサービスを提供するホーム局構内交換機、120、220、320は各サービスエリア130、230、330内に設置された無線回線基地局装置、200、300はホーム局構内交換機100と通信回線150で相互接続されたビクタ局構内交換機であり、同じく携帯無線電話機400に対して位置登録、発信、着信等の広域ローミングサービスを提供する。400はホーム局構内交換機100およびビクタ局構内交換機200、300がそれぞれ分担する異なるサービスエリア130、230、330を移動する携帯無線電話機である。

【0003】次に動作について説明する。図11は従来の携帯無線電話機の広域ローミング認証装置の位置登録動作を示すシーケンス図である。まず、サービスエリア330内に位置する携帯無線電話機400が、サービスエリア230内に移動した場合、携帯無線電話機400はサービスエリア230内の無線回線基地局装置220に対して位置登録要求信号21を送出する。次に、この位置登録要求信号21を受信したビクタ局構内交換機200は、携帯無線電話機400のホーム局構内交換機100への通信回線150を検索し、検索した通信回線150を介してホーム局構内交換機100に情報取得要求信号22を送出する。

【0004】そして、この情報取得要求信号22を受信したホーム局構内交換機100は、ビクタ局構内交換機200に通信回線150を介して情報取得応答信号23を返送する。次に、情報取得応答信号23を受信したビクタ局構内交換機200は、携帯無線電話機400に対し認証要求信号24を常時送出すると同時に、ホーム局構内交換機100に対し同

[Technological Field of Invention] This invention decreases number of signal processes inside private common user network without always starting certification between home station in-house switching equipment and visitor station in-house switching equipment, can make the traffic low, it is a wide area roaming authentication equipment of portable wireless telephone and something regarding the wide area roaming authentication method.

[0002]

[Prior Art] As for Figure 10, Being a configuration diagram which shows gist of wide area roaming authentication equipment of conventional portable wireless telephone which is stated in for example Japan Unexamined Patent Publication Hei 8-237727 disclosure to be, In figure, as for 100 with home station in-house switching equipment which offers position registration, dispatching and receive or other wide area roaming service vis-a-vis portable wireless telephone 400, as for 120, 220, 320 with the radio circuit base station equipment which is installed inside each service area 130, 230, 330, 200, 300 is visitor station in-house switching equipment which interconnect is done with home station in-house switching equipment 100 and communication circuit 150, position registration, dispatching and receive or other wide area roaming service are offered similarly vis-a-vis portable wireless telephone 400. It is a portable wireless telephone which moves service area 130, 230, 330 where home station in-house switching equipment 100 and visitor station in-house switching equipment 200, 300 the division do 400 respectively and differ.

[0003] Next you explain concerning operation. Figure 11 is sequence chart which shows position registration actuation of wide area roaming authentication equipment of the conventional portable wireless telephone. First, when portable wireless telephone 400 which is in position inside service area 330, it moved into service area 230, portable wireless telephone 400 forwards position registration request signal 21 vis-a-vis radio circuit base station equipment 220 inside service area 230. Next, visitor station in-house switching equipment 200 which receives this position registration request signal 21 searches communication circuit 150 to the home station in-house switching equipment 100 of portable wireless telephone 400, through communication circuit 150 which is searched forwards the information acquisition request 22 to home station in-house switching equipment 100.

[0004] And, home station in-house switching equipment 100 which receives this information acquisition request 22, through communication circuit 150 to the visitor station in-house switching equipment 200, sends back information acquisition response 23. Next, when authentication request signal 24 usual is forwarded vis-a-vis portable wireless telephone

一の認証乱数を含む交換機間認証要求信号 40 を常時送出する。そして、携帯無線電話機 400 およびホーム局構内交換機 100 は、認証演算アルゴリズムを用いて受信した認証乱数を予め相互に持つ認証鍵との認証演算を行い、携帯無線電話機 400 は認証成功情報を含む認証応答信号 25 をビジタ局構内交換機 200 に常時返送する。また、ホーム局構内交換機 100 は認証成功情報を含む交換機間認証応答信号 41 をそれぞれビジタ局構内交換機 200 に常時返送する。

【0005】次に、ビジタ局構内交換機 200 は受信した認証応答信号 25 から認証成功を識別し、ホーム局構内交換機 100 に位置情報登録要求信号 26 を送出する。そして、ホーム局構内交換機 100 は受信した位置情報登録要求信号 26 に基づいて、携帯無線電話機 400 の固有の位置情報を含む携帯無線電話機情報の内容を更新するとともに、位置情報登録応答信号 28 をビジタ局構内交換機 200 へ返送する。そして、この位置情報登録応答信号 28 を受信したビジタ局構内交換機 200 は、携帯無線電話機 400 の携帯無線電話機情報を登録するとともに、携帯無線電話機 400 に対し位置登録応答信号 31 を送出する。

【0006】また、ホーム局構内交換機 100 は、携帯無線電話機 400 の移動前のサービスエリア 330 を分担するビジタ局構内交換機 300 に対し、携帯無線電話機 400 の携帯無線電話機情報の抹消要求信号 29 を送出する。そして、この抹消要求信号 29 を受信したビジタ局構内交換機 300 は、登録されている携帯無線電話機 400 の携帯無線電話機情報を抹消処理するとともに、ホーム局構内交換機 100 に対し抹消応答信号 33 を返送する。そして、携帯無線電話機 400 は、ホーム局構内交換機 100 がビジタ局構内交換機 300 からの抹消応答信号 33 を正常に受信した時点でビジタ局構内交換機 200 へのローミング情報の登録を完了する。

400simultaneously, authentication request signal 40 between switching equipment which includes samerandom authentication number vis-a-vis home station in-house switching equipment 100 usual it forwards visitor station in-house switching equipment 200 which receives the information acquisition response 23. And, portable wireless telephone 400 and home station in-house switching equipment 100 do authentication of authentication key which has the random authentication number which is received making use of authentication algorithm beforehand mutually the authentication response signal 25 which includes authentication success information usual send back portable wireless telephone 400 in the visitor station in-house switching equipment 200. In addition, authentication response signal 41 between switching equipment which includes authentication success information usual it sends back home station in-house switching equipment 100 in respective visitor station in-house switching equipment 200.

[0005] Next, visitor station in-house switching equipment 200 identifies authentication success from authentication response signal 25 which is received, forwards position information registration request signal 26 to home station in-house switching equipment 100. And, home station in-house switching equipment 100 basis being in position information registration request signal 26 which is received, as it renews content of portable wireless telephone information which includes position information of peculiar of the portable wireless telephone 400, sends back position information registration response signal 28 to visitor station in-house switching equipment 200. And, visitor station in-house switching equipment 200 which receives this position information registration response signal 28, as portable wireless telephone information of portable wireless telephone 400 is registered, forwards position registration response signal 31 vis-a-vis portable wireless telephone 400.

[0006] In addition, home station in-house switching equipment 100 forwards terminal request signal 29 of portable wireless telephone information of portable wireless telephone 400 vis-a-vis visitor station in-house switching equipment 300 which service area 330 before moving portable wireless telephone 400 division is done. And, visitor station in-house switching equipment 300 which receives this terminal request signal 29 as it erases treats portable wireless telephone information of portable wireless telephone 400 which is registered, sends back terminal response signal 33 vis-a-vis the home station in-house switching equipment 100. And, portable wireless telephone 400 completes register of roaming information to visitor station in-house switching equipment 200 with the time point where home station in-house switching equipment 100 receives terminal response signal 33 from visitor station in-house switching equipment 300 normally.

【０００７】以上のように、従来の携帯無線電話機の広域ローミング認証装置では、ホーム局構内交換機１００およびビジタ局構内交換機２００、３００で構成する私設総合サービス網内に唯一でも保有している認証アルゴリズム種別の異なるビジタ局構内交換機２００、３００が存在するならば、常にホーム局構内交換機１００とビジタ局構内交換機２００、３００との間の認証を実施するものである。

【０００８】したがって、上記の私設総合サービス網内に唯一でも保有する認証アルゴリズムが他と異なるビジタ局構内交換機２００、３００が存在した場合、ビジタ局構内交換機２００、３００の分担するサービスエリア１３０、２３０、３３０内に携帯無線電話機４００が移動した場合に、携帯無線電話機４００からの位置登録要求２１を受信したビジタ局構内交換機２００は、携帯無線電話機４００への認証シーケンス起動と同時に、携帯無線電話機４００に関するホームロケーションレジスタを有するホーム局構内交換機１００に対しても認証シーケンスを起動する。

【０００９】その後、携帯無線電話機４００からの認証演算結果とホーム局構内交換機１００からの認証演算結果をビジタ局構内交換機２００にて照合するものであり、また、このときホーム局構内交換機１００からみて携帯無線電話機４００の移動先であるビジタ局構内交換機２００が保有する認証アルゴリズムが自己の保有するものと同一であるか否かが不明であるため、私設総合サービス網内に唯一でも保有する認証アルゴリズムが他と異なるビジタ局構内交換機２００が存在した場合、私設総合サービス網内のビジタ局構内交換機２００全体の動作として常にホーム局構内交換機１００およびビジタ局構内交換機２００との間の認証を起動するものである。

【００１０】

【発明が解決しようとする課題】従来の携帯無線電話機の広域ローミング認証装置は以上のように構成されているので、他と異なる認証アルゴリズムを保有するビジタ局構内交換機２００、３００が存在した場合、常にホーム局構内交換機１００とビジタ局構内交換機２００、３００との間の認証シーケンスを起動する必要があった。したがって、私設総合サービス網内の不要な信号処理数が増し、私設総合サービス網全

[0007] Like above, if with wide area roaming authentication equipment of conventional portable wireless telephone, visitor station in-house switching equipment 200,300 where authentication algorithm typewhich inside private common user network which is formed with home station in-house switching equipment 100 and visitor station in-house switching equipment 200,300 is possessed even with only one differs is exists, it is something which always executes certification with home station in-house switching equipment 100 and visitor station in-house switching equipment 200,300.

[0008] Therefore, when visitor station in-house switching equipment 200,300 where authentication algorithm which inside the above-mentioned private common user network is possessed even with only one differs from other things exists, division of visitor station in-house switching equipment 200,300 when portable wireless telephone 400 moved into the service area 130, 230, 330 which is done, visitor station in-house switching equipment 200 which receives position registration request 21 from the portable wireless telephone 400 simultaneously with authentication sequence initialization to portable wireless telephone 400, starts authentication sequence vis-a-vis home station in-house switching equipment 100 which possesses home location register regarding portable wireless telephone 400.

[0009] After that, Being a authentication result from portable wireless telephone 400 and something which collates authentication result from home station in-house switching equipment 100 with visitor station in-house switching equipment 200, to be, In addition, whether or not which is same as those which authentication algorithm which visitor station in-house switching equipment 200 which is a movement destination of portable wireless telephone 400 this time considered as home station in-house switching equipment 100 possesses self is obscurity for sake of, When visitor station in-house switching equipment 200 where authentication algorithm which inside private common user network is possessed even with only one differs from other things exists, it is something which always starts certification with home station in-house switching equipment 100 and visitor station in-house switching equipment 200 as operation of visitor station in-house switching equipment 200 entirety inside private common user network.

[0010]

[Problems to be Solved by the Invention] Because wide area roaming authentication equipment of conventional portable wireless telephone is formed like above, when visitor station in-house switching equipment 200,300 which possesses authentication algorithm which differs from other things exists, it was necessary always to start authentication sequence with home station in-house switching equipment 100 and visitor



体のトラフィックを高くし、単位時間あたりに処理できる私設総合サービス網内の発着信処理数を低くするなどの課題があった。

【0011】この発明は上記のような課題を解決するためになされたもので、私設総合サービス網内において、他と異なる認証アルゴリズムを保有した構内交換機が存在する場合でも、常にホーム局構内交換機およびビジタ局構内交換機間認証を起動することなく、私設総合サービス網内の信号処理数を低減しトラフィックを低くする携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法を得ることを目的とする。

【0012】

【課題を解決するための手段】請求項1記載の発明に係る携帯無線電話機の広域ローミング認証装置は、ホーム局構内交換機において、携帯無線電話機に関する情報を保持するホームロケーションレジスタと全ビジタ局構内交換機の各ビジタ局情報種別を設定したビジタ局情報種別保持手段とを備え、携帯無線電話機の移動先であるビジタ局構内交換機のビジタ局情報種別と自己のビジタ局情報種別とが同一であれば、携帯無線電話機の移動先であるビジタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示するようにしたものである。

【0013】請求項2記載の発明に係る携帯無線電話機の広域ローミング認証方法は、ビジタ局構内交換機において、他のサービスエリア内から自己が分担するサービスエリア内に携帯無線電話機が移動してきたとき、この携帯無線電話機のホーム局構内交換機を識別し、ホーム局構内交換機に対して携帯無線電話機の情報要求し、ホーム局構内交換機において、携帯無線電話機に関する情報をホームロケーションレジスタから読み出すとともに、全ビジタ局構内交換機の各ビジタ局情報種別を設定したビジタ局情報種別保持手段から携帯無線電話機の移動先であるビジタ局構内交換機の情報要求し、自己のビジタ局情報種別と同一であれば、携帯無線電話機の移動先であるビジタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示するようにしたものである。

station in-house switching equipment 200,300. Therefore, there was a or other problem which makes number of send/receive processes inside private common user network where amount of unnecessary signal processing inside private common user network increases, makes traffic of the private common user network entirely high, can treat in per unit time low.

[0011] As for this invention as description above something which can be done in order to solve problem being, In inside private common user network, number of signal processes inside private common user network is decreased even with when in-house switching equipment which possesses authentication algorithm which differs from other things exists without always starting certification between the home station in-house switching equipment and visitor station in-house switching equipment, and wide area roaming authentication equipment of portable wireless telephone which makes traffic low and that wide area roaming authentication method is obtained are designated as objective.

[0012]

[Means to Solve the Problems] As for wide area roaming authentication equipment of portable wireless telephone which relates to invention which is stated in Claim 1, home location register which keeps information regarding the portable wireless telephone in home station in-house switching equipment, visitor station information type grasping means which sets each visitor station information type of all visitor station in-house switching equipment having, If are same as visitor station information type of visitor station in-house switching equipment which is a movement destination of the portable wireless telephone and visitor station information type of self, it is something which it tries to indicate whether or not which executes authentication scenario between switching equipment vis-a-vis visitor station in-house switching equipment which is a movement destination of portable wireless telephone.

[0013] Relates to invention which is stated in Claim 2 as for wide area roaming authentication method of portable wireless telephone which, In visitor station in-house switching equipment putting, self portable wireless telephone moved inside service area which division is done from inside other service area time, home station in-house switching equipment of this portable wireless telephone is identified, information of portable wireless telephone is required vis-a-vis home station in-house switching equipment, In home station in-house switching equipment putting, As information regarding portable wireless telephone is read out from home location register, if the information of visitor station in-house switching equipment which is a movement destination of portable wireless telephone

【0014】請求項3記載の発明に係る携帯無線電話機の広域ローミング認証方法は、ビジタ局構内交換機において、他のサービスエリア内から自己が分担するサービスエリア内に携帯無線電話機が移動してきたとき、この携帯無線電話機のホーム局構内交換機を識別し、ホーム局構内交換機に対して携帯無線電話機の情報取得要求時に、ビジタ局情報種別保持手段から携帯無線電話機の移動先であるビジタ局構内交換機のビジタ局情報種別を要求し、ホーム局構内交換機において、携帯無線電話機に関する情報をホームロケーションレジスタから読み出すと同時に、情報取得要求信号内に含まれた携帯無線電話機の移動先であるビジタ局構内交換機に関するビジタ局情報種別を検出し、自己のビジタ局情報種別と同一であれば、携帯無線電話機の移動先であるビジタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示するようにしたものである。

【0015】請求項4記載の発明に係る携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法は、ビジタ局情報種別保持手段において、網内構内交換機属性テーブルに全ビジタ局構内交換機の認証演算アルゴリズム種別を設定するようにしたものである。

【0016】請求項5記載の発明に係る携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法は、網内構内交換機属性テーブルに全ビジタ局構内交換機のメーカー種別を設定するようにしたものである。

【0017】請求項6記載の発明に係る携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法は、網内構内交換機属性テーブルに全ビジタ局構内交換機のスタンダード標準化委員会の第28班のバージョン種別およびメーカー

from visitor station information type grasping means which sets each visitor station information type of all visitor station in-house switching equipment is required and it is same as the visitor station information type of self, it is something which it tries to indicate whether or not which executes authentication scenario between switching equipment vis-a-vis visitor station in-house switching equipment which is a movement destination of portable wireless telephone.

[0014] Relates to invention which is stated in Claim 3 as for wide area roaming authentication method of portable wireless telephone which, In visitor station in-house switching equipment putting, self portable wireless telephone moved inside service area which division is done from inside other service area time, home station in-house switching equipment of this portable wireless telephone is identified, Vis-a-vis home station in-house switching equipment at a time of information acquisition request of portable wireless telephone, visitor station information type of visitor station in-house switching equipment which is a movement destination of portable wireless telephone from visitor station information type grasping means is required, In home station in-house switching equipment, when information regarding portable wireless telephone is read out from the home location register if simultaneously, visitor station information type regarding visitor station in-house switching equipment which is a movement destination of portable wireless telephone which is included inside information acquisition request is detected and it is same as visitor station information type of self, it is something which it tries to indicate whether or not which executes authentication scenario between switching equipment vis-a-vis visitor station in-house switching equipment which is a movement destination of portable wireless telephone.

[0015] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which relates to invention which is stated in Claim 4 are something which it tries to set the authentication algorithm type of all visitor station in-house switching equipment to intranetwork switching equipment attribute table in visitor station information type grasping means.

[0016] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which relates to invention which is stated in Claim 5 are something which it tries to set the manufacturer type of all visitor station in-house switching equipment to intranetwork switching equipment attribute table.

[0017] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which relates to invention which is stated in Claim 6 are something which in intranetwork switching equipment

力種別を設定するようにしたものである。

【0018】請求項7記載の発明に係る携帯無線電話機の広域ローミング認証装置および広域ローミング認証方法は、網内構内交換機属性テーブルに全ビクタ局構内交換機の認証シナリオ種別を設定するようにしたものである。

【0019】

【発明の実施の形態】以下、この発明の実施の一形態を説明する。

実施の形態1. 図1はこの発明の実施の形態1による携帯無線電話機の広域ローミング認証装置を示す構成図であり、図において、100はホーム局構内交換機であり、ホームロケーションレジスタ101とビクタ局構内交換機200、300に関する情報を格納した網内構内交換機属性テーブル500とを有するとともに、携帯無線電話機400に対して位置登録、発信、着信等の広域ローミングサービスを提供するのである。110、210、310は回線制御装置、120、220、320は各サービスエリア130、230、330内に設置された無線回線基地局装置、200、300は各ビクタロケーションレジスタ201、301を有し、ホーム局構内交換機100と通信回線150で相互接続されたビクタ局構内交換機であり、同じく携帯無線電話機400に対して位置登録、発信、着信等の広域ローミングサービスを提供する。400はホーム局構内交換機100およびビクタ局構内交換機200、300がそれぞれ分担する異なるサービスエリア130、230、330を移動する携帯無線電話機である。

【0020】次に動作について説明する。図2はこの発明の実施の形態1による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。まず、ビクタ局構内交換機300のサービスエリア330内に位置する携帯無線電話機400が、ビクタ局構内交換機200のサービスエリア230内に移動すると、携帯無線電話機400は、ビクタ局構内交換機200から常時送出される報知信号に含まれている複数のスタンダード標準化委員会の第28班に規定されるシステム呼出符号+付加IDから構成される無線呼出符号を検出する。

attribute table is made the version type of 28th group of standardization committee of all visitor station in-house switching equipment and to set the manufacturer type.

[0018] Wide area roaming authentication equipment and wide area roaming authentication method of portable wireless telephone which relates to invention which is stated in Claim 7 are something which it tries to set the authentication scenario type of all visitor station in-house switching equipment to intranetwork switching equipment attribute table.

[0019]

[Embodiment of Invention] Below, one shape of execution of this invention is explained.

Embodiment 1. Figure 1 is configuration diagram which shows wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 1, 100 is home station in-house switching equipment as in figure, it possesses with the home location register 101 and intranetwork switching equipment attribute table 500 which houses information regarding visitor station in-house switching equipment 200, 300, it is something which offers position registration, dispatching and receive or other wide area roaming service vis-a-vis the portable wireless telephone 400. As for 110, 210, 310 with circuit control equipment, as for 120, 220, 320 with radio circuit base station equipment which is installed inside each service area 130, 230, 330, as for 200, 300 it possesses each visitor location register 201, 301, it is a visitor station in-house switching equipment which interconnect is done with home station in-house switching equipment 100 and the communication circuit 150, position registration, dispatching and receive or other wide area roaming service are offered similarly vis-a-vis portable wireless telephone 400. It is a portable wireless telephone which moves service area 130, 230, 330 where home station in-house switching equipment 100 and visitor station in-house switching equipment 200, 300 the division do 400 respectively and differ.

[0020] Next you explain concerning operation. Figure 2 is sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 1. First, when portable wireless telephone 400 which is in position inside service area 330 of the visitor station in-house switching equipment 300, moves into service area 230 of visitor station in-house switching equipment 200, portable wireless telephone 400 detects radio call sign which is formed from system call sign + addition ID which is stipulated in the 28th group of standardization committee of multiple which is included in the alerting signal which usual is forwarded from visitor station in-house switching equipment 200.

【0021】次に、携帯無線電話機400は、検出した無線呼出符号が移動前に位置したビタ局構内交換機300のサービスエリア330の無線回線基地局装置320から受信した無線呼出符号と異なる場合、移動先の無線回線基地局装置220に対して位置登録要求信号21を送出する。また、携帯無線電話機400に予め登録されている複数の無線呼出符号の中で一致する無線呼出符号がある場合も、移動先の無線回線基地局装置220に対して位置登録要求信号21を送出する。

【0022】その後、ビタ局構内交換機200は、位置登録要求信号21に含まれている携帯無線電話機400のスタンダード標準化委員会の第28班に規定されるPS番号を検出し、検出したPS番号から携帯無線電話機400のホームロケーションレジスタ101を有するホーム局構内交換機100への通信回線150を検索する。そして、ビタ局構内交換機200は、検索した通信回線150を介して情報取得要求信号22をホーム局構内交換機100へ送出する。

【0023】次に、この情報取得要求信号22を受信したホーム局構内交換機100は、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、予め備えたビタ局構内交換機200、300に関する情報を格納した網内構内交換機属性テーブル500から携帯無線電話機400の移動先であるビタ局構内交換機200の保有している認証演算アルゴリズム種別を読み出す。例えば、この実施の形態の網内構内交換機属性テーブル500では認証演算アルゴリズム種別A、B、Cを有している。

【0024】次に、ホーム局構内交換機100は、読み出したビタ局構内交換機200の保有する認証演算アルゴリズム種別と自己の保有する認証演算アルゴリズム種別を比較し、一致する場合は、互いに持つ認証演算アルゴリズムが同一であるため携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビタ局構内交換機200へ通信回線を介して返送する、一方、一致しない場合には、携帯無線電話機400固有の情報のうち、認証鍵のみを含まない情報取得応答信号23をビタ局構内交換機200へ通信回線を介して返送する。

[0021] Next, portable wireless telephone 400 when radio call sign which is detected it is to be it differs from radio call sign which is received from radio circuit base station equipment 320 of service area 330 of visitor station in-house switching equipment 300 in position before moving, forwards position registration request signal 21 vis-a-vis the radio circuit base station equipment 220 of movement destination. In addition, when there is a radio call sign which agrees in radio call sign of the multiple which is beforehand registered to portable wireless telephone 400, position registration request signal 21 is forwarded vis-a-vis radio circuit base station equipment 220 of movement destination.

[0022] After that, visitor station in-house switching equipment 200 detects PS number which is stipulated in the 28th group of standardization committee of portable wireless telephone 400 which is included in position registration request signal 21, searches communication circuit 150 to home station in-house switching equipment 100 which possesses home location register 101 of portable wireless telephone 400 from PS number which is detected. And, visitor station in-house switching equipment 200 through communication circuit 150 which is searched forwards information acquisition request 22 to home station in-house switching equipment 100.

[0023] Next, home station in-house switching equipment 100 which receives this information acquisition request 22, when call sign of the portable wireless telephone 400 peculiar, authentication key and service information are read out from home location register 101, simultaneously, reads out authentication algorithm type which visitor station in-house switching equipment 200 which is a movement destination of portable wireless telephone 400 from intranetwork switching equipment attribute table 500 which houses information regarding visitor station in-house switching equipment 200, 300 which it has beforehand possesses. With intranetwork switching equipment attribute table 500 of this embodiment of for example it has possessed authentication algorithm type A, B, C.

[0024] Next, home station in-house switching equipment 100 reading is compares authentication algorithm type which visitor station in-house switching equipment 200 possesses and authentication algorithm type which self possesses, when it agrees, because authentication algorithm which it has mutually is same, radio call sign of the portable wireless telephone 400 peculiar, through communication circuit to visitor station in-house switching equipment 200, sends back information acquisition response 23 which includes authentication key and service type. On one hand, when it does not agree, among information of portable wireless telephone 400 peculiar, the information acquisition response 23 which does not include

【0025】次に、ビジュ局構内交換機200は、通信回線150を介してホーム局構内交換機100から認証鍵を含む情報取得応答信号23を受信した後、携帯無線電話機400に対し認証乱数を含む認証要求信号24を送出する。そして、携帯無線電話機400は受信した認証乱数を、予め相互に持つ認証鍵と認証演算アルゴリズムを用いて認証演算を行い、認証成功情報を含む認証応答信号25をビジュ局構内交換機200へ返送する。次に、認証鍵の含まれない情報取得応答信号23を受信したビジュ局構内交換機200は、携帯無線電話機400に対し認証乱数を含む認証要求信号24を送出すると同時に、ホーム局構内交換機100に対し同一の認証乱数を含む交換機間認証要求信号40を送出する。

【0026】次に、携帯無線電話機400およびホーム局構内交換機100は、受信した認証乱数を、予め相互に持つ認証鍵と認証演算アルゴリズムを用いて認証演算を行う。そして、携帯無線電話機400は認証成功情報を含む認証応答信号25をビジュ局構内交換機200に返送し、ホーム局構内交換機100は認証成功情報を含む交換機間認証応答信号41をビジュ局構内交換機200に返送する。

【0027】次に、ビジュ局構内交換機200は、受信した認証応答信号25から認証成功を識別し、ホーム局構内交換機100は位置情報登録要求信号26を送出する。そして、ホーム局構内交換機100は位置情報登録要求信号26に基づいて、ホームロケーションレジスタ101の携帯無線電話機固有の位置情報を含む携帯無線電話機情報の内容を更新するとともに、位置情報登録応答信号28をビジュ局構内交換機200へ返送する。そして、ビジュ局構内交換機200ではホーム局構内交換機100から位置情報登録応答信号28を受信すると、ビジュロケーションレジスタ201に新たに携帯無線電話機400の携帯無線電話機情報を登録すると共に携帯無線電話機400に対し位置登録応答信号31を送出する。

only authentication key is sent back through the communication circuit to visitor station in-house switching equipment 200.

[0025] Next, visitor station in-house switching equipment 200, through communication circuit 150, after receiving information acquisition response 23 which includes authentication key from home station in-house switching equipment 100, forwards authentication request signal 24 which includes the random authentication number vis-a-vis portable wireless telephone 400. And, portable wireless telephone 400 does authentication making use of authentication key and authentication algorithm which have random authentication number which is received, beforehand mutually sends back the authentication response signal 25 which includes authentication success information to visitor station in-house switching equipment 200. Next, visitor station in-house switching equipment 200 which receives information acquisition response 23 where authentication key is not included when authentication request signal 24 which includes random authentication number vis-a-vis portable wireless telephone 400 is forwarded simultaneously, forwards authentication request signal 40 between switching equipment which includes same random authentication number vis-a-vis home station in-house switching equipment 100.

[0026] Next, portable wireless telephone 400 and home station in-house switching equipment 100 do authentication making use of authentication key and the authentication algorithm which have random authentication number which is received, beforehand mutually. And, portable wireless telephone 400 sends back authentication response signal 25 which includes authentication success information to the visitor station in-house switching equipment 200, home station in-house switching equipment 100 sends back authentication response signal 41 between switching equipment which includes the authentication success information to visitor station in-house switching equipment 200.

[0027] Next, visitor station in-house switching equipment 200 identifies authentication success from authentication response signal 25 which is received, the home station in-house switching equipment 100 forwards position information registration request signal 26. And, home station in-house switching equipment 100 basis being in position information registration request signal 26, as it renews content of the portable wireless telephone information which includes position information of portable wireless telephone peculiar of home location register 101, sends back the position information registration response signal 28 to visitor station in-house switching equipment 200. When and, with visitor station in-house switching equipment 200 position information registration response signal 28 is received from home station in-house switching equipment 100,

【0028】一方、ホーム局構内交換機100は、携帯無線電話機400の移動前のサービスエリア330を分担するビジタ局構内交換機300に対し、携帯無線電話機400の携帯無線電話機情報の抹消要求信号29を送出する。次に、ビジタ局構内交換機300はビジタロケーションレジスタ301に登録されている携帯無線電話機400の携帯無線電話機情報を抹消処理するとともに、ホーム局構内交換機100に対し抹消応答信号33を返送する。そして、携帯無線電話機400は、ホーム局構内交換機100がビジタ局構内交換機300からの抹消応答信号33を正常に受信した時点で、ビジタ局構内交換機200へのローミング情報の登録を完了する。

【0029】以上のように、この実施の形態1によれば、ホーム局構内交換機100は、網内構内交換機属性テーブル500を用いて、ビジタ局構内交換機200の認証演算アルゴリズム種別と自己の認証演算アルゴリズム種別とを比較管理することにより、他と異なる認証アルゴリズムを保有した構内交換機が存在する場合でも、常にホーム局構内交換機100およびビジタ局構内交換機200、300間の認証を起動することなく、私設総合サービス網内の信号処理数を低減しトラフィックを低くするなどの効果が得られる。

【0030】実施の形態2。図3はこの発明の実施の形態2による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態1と同一であるので、同一符号および内容についての説明を省略する。実施の形態1では網内構内交換機属性テーブル500内に認証演算アルゴリズム種別を設定するものを示したが、図3に示すように網内構内交換機属性テーブル500内にメーカー種別を設定してもよい。

【0031】この場合、ビジタ局構内交換機200から情報取得要求信号22を受信したホーム局構内交換機100では、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、予め備えたビジタ局構内交換機200、300に関する

as the portable wireless telephone information of portable wireless telephone 400 is registered to visitor location register 201 anew, position registration response signal 31 is forwarded vis-a-vis portable wireless telephone 400.

[0028] On one hand, home station in-house switching equipment 100 forwards terminal request signal 29 of portable wireless telephone information of portable wireless telephone 400 vis-a-vis visitor station in-house switching equipment 300 which service area 330 before moving portable wireless telephone 400 division is done. Next, visitor station in-house switching equipment 300 as it erases treats portable wireless telephone information of portable wireless telephone 400 which is registered to visitor location register 301, sends back terminal response signal 33 vis-a-vis home station in-house switching equipment 100. And, portable wireless telephone 400, with time point where home station in-house switching equipment 100 receives terminal response signal 33 from the visitor station in-house switching equipment 300 normally, completes register of roaming information to visitor station in-house switching equipment 200.

[0029] Like above, In this embodiment 1 we depend, home station in-house switching equipment 100, decreases number of signal processes inside private common user network even with when their in-house switching equipment which possesses authentication algorithm which differs from other things by comparing manages authentication algorithm type of visitor station in-house switching equipment 200 and authentication algorithm type of selfmaking use of intranetwork switching equipment attribute table 500, exists without always starting the certification between home station in-house switching equipment 100 and visitor station in-house switching equipment 200, 300, or other effect which makes traffic low is acquired.

[0030] Embodiment 2. Figure 3 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 2, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With embodiment 1 those which set authentication algorithm type inside intranetwork switching equipment attribute table 500 were shown, but as shown in Figure 3, it is possible to set manufacturer type inside the intranetwork switching equipment attribute table 500.

[0031] In this case, with home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out

る情報を格納した網内構内交換機属性テーブル500から携帯無線電話機400の移動先であるビジタ局構内交換機200のメーカー種別を読み出す。次に、ホーム局構内交換機100は読み出したビジタ局構内交換機200のメーカー種別と自己のメーカー種別を比較し、一致する場合は互いに持つ認証演算アルゴリズムが同一であるため携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。一致しない場合に限り、携帯無線電話機400固有の情報のうち、認証鍵のみを含まない情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。

【0032】 以上のように、この実施の形態2によれば、実施の形態1の効果の他にメーカー種別毎の比較管理も行うことができるなどの効果が得られる。

【0033】 実施の形態3。図4はこの発明の実施の形態3による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態1と同一であるので、同一符号および内容についての説明を省略する。実施の形態1では網内構内交換機属性テーブル500内に認証演算アルゴリズム種別を設定するものを示したが、図4に示すように、網内構内交換機属性テーブル500内にスタンダード標準化委員会の第28班のバージョン種別およびメーカー種別を設定してもよい。

【0034】 この場合、ビジタ局構内交換機200から情報取得要求信号22を受信したホーム局構内交換機100は、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、予め備えたビジタ局構内交換機200、300に関する情報を格納した網内構内交換機属性テーブル500から携帯無線電話機400の移動先であるビジタ局構内交換機200のスタンダード標準化委員会の第28班のバージョン種別およびメーカー種別を読み出す。

from the home location register 101, simultaneously, manufacturer type of visitor station in-house switching equipment 200 which is a movement destination of the portable wireless telephone 400 from intranetwork switching equipment attribute table 500 which houses information regarding visitor station in-house switching equipment 200, 300 which it has beforehand is read out. Next, as for home station in-house switching equipment 100 reading it is to compare manufacturer type of the visitor station in-house switching equipment 200 and manufacturer type of self, when it agrees, because authentication algorithm which it has mutually is same, radio call sign of portable wireless telephone 400 peculiar, information acquisition response 23 which includes authentication key and service type is sent back through communication circuit to visitor station in-house switching equipment 200. Among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only the authentication key through communication circuit to visitor station in-house switching equipment 200, is sent back only when it does not agree.

[0032] Like above, according to this embodiment 2, or other effect which also management of comparison every of manufacturer type can do to other than effect of the embodiment 1 is acquired.

[0033] Embodiment 3. Figure 4 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 3, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With embodiment 1 those which set authentication algorithm type inside intranetwork switching equipment attribute table 500 were shown, but as shown in Figure 4, it is possible to set version type and the manufacturer type of 28th group of standardization committee inside intranetwork switching equipment attribute table 500.

[0034] In this case, home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when the call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out from the home location register 101, simultaneously, reads out version type and manufacturer type of 28th group of standardization committee of visitor station in-house switching equipment 200 which is a movement destination of portable wireless telephone 400 from the intranetwork switching equipment attribute table 500 which houses information regarding visitor station in-house switching equipment 200, 300 which it has beforehand.



【0035】次に、ホーム局構内交換機100は、読み出したビジタ局構内交換機200のスタンダード標準化委員会の第28班のバージョン種別が第2版でありかつ携帯無線電話機400が第2版で動作するならば、ビジタ局構内交換機200は自営用標準認証アルゴリズムを保有しているため、携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。

【0036】次に、携帯無線電話機400が第1版で動作する場合でもメーカ種別が自己のメーカ種別と一致するならば、互いに持つ認証演算アルゴリズムが同一であるため携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。これらの条件が一致しない場合に限り、携帯無線電話機400固有の情報のうち、認証鍵のみを含まない情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。

【0037】以上のように、この実施の形態3によれば、実施の形態1の効果の他にスタンダード標準化委員会の第28班のバージョン種別毎の比較管理も行いうることができるなどの効果が得られる。

【0038】実施の形態4。図5はこの発明の実施の形態4による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態1と同一であるので、同一符号および内容についての説明を省略する。上記実施の形態1では網内構内交換機属性テーブル500内に認証演算アルゴリズム種別を設定するものを示したが、図5に示すように、網内構内交換機属性テーブル500内に認証シナリオ種別を設定してもよい。

【0039】この場合、ビジタ局構内交換機200から情報取得要求信号22を受信したホーム局構内交換機100は、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、予め備えたビジタ局構内交換機200、300に関する情報を格納した網内構内交換機属性テーブル500から携帯無線電話機400の移動先であるビジタ局構内交換機200の認証シナリオ種別を読み出す。

[0035] Next, as for home station in-house switching equipment 100, reading is version type of 28th group of the standardization committee of visitor station in-house switching equipment 200 to be 2nd edition, at same time portable wireless telephone 400 being 2nd edition, if it operates is, visitor station in-house switching equipment 200 because standard authentication algorithm for self-management is possessed, radio call sign of portable wireless telephone 400 peculiar, through the communication circuit to visitor station in-house switching equipment 200, sends back information acquisition response 23 which includes authentication key and the service type.

[0036] Next, portable wireless telephone 400 being 1st edition, if, manufacturer type agrees with manufacturer type of self is even with when it operates, because authentication algorithm which it has mutually is same radio call sign of portable wireless telephone 400 peculiar, information acquisition response 23 which includes authentication key and service type is sent back through communication circuit to the visitor station in-house switching equipment 200. Among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only the authentication key through communication circuit to visitor station in-house switching equipment 200, is sent back only when these condition do not agree.

[0037] Like above, according to this embodiment 3, to other than an effect of the embodiment 1, or other effect which also management of comparison every of version type of 28th group of standardization committee can do is acquired.

[0038] Embodiment 4. Figure 5 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 4, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With above-mentioned embodiment 1 those which set authentication algorithm type inside the intranetwork switching equipment attribute table 500 were shown, but as shown in Figure 5, it is possible to set the authentication scenario type inside intranetwork switching equipment attribute table 500.

[0039] In this case, home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when the call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out from the home location register 101, simultaneously, reads out authentication scenario type of visitor station in-house switching equipment 200 which is a movement destination of



【0040】次に、ホーム局構内交換機100では、読み出したビジタ局構内交換機200の認証シナリオ種別が、ビジタ局構内交換機および携帯無線電話機間認証である場合は、互いに持つ認証演算アルゴリズムが同一であるため携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。一方、交換機間認証シナリオの場合に限り、携帯無線電話機400固有の情報のうち、認証鍵のみを含まない情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。

【0041】以上のように、この実施の形態4によれば、実施の形態1の効果の他に認証シナリオ種別毎の比較管理も行うことができるなどの効果が得られる。

【0042】実施の形態5。図6はこの発明の実施の形態5による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態1と同一であるので、同一符号および内容についての説明を省略する。上記実施の形態1ではホーム局構内交換機100内に予め網内構内交換機属性テーブル500を備え、これに認証演算アルゴリズム種別を設定するものを示したが、図6に示すように、この認証演算アルゴリズム種別をビジタ局構内交換機200からホーム局構内交換機100への情報取得要求信号22内に含んでもよい。

【0043】この場合、ビジタ局構内交換機200から情報取得要求信号22を受信したホーム局構内交換機100は、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、受信した情報取得要求信号22からビジタ局構内交換機200に関する認証演算アルゴリズム種別を読み出す。

【0044】次に、ホーム局構内交換機100は、読み出し

portable wireless telephone 400 from intranetwork switching equipment attribute table 500 which houses information regarding the visitor station in-house switching equipment 200, 300 which it has beforehand.

[0040] Next, with home station in-house switching equipment 100, when reading it is authentication scenario type of visitor station in-house switching equipment 200, it is a certification between visitor station in-house switching equipment and portable wireless telephone, because authentication algorithm which it has mutually is same radio call sign of portable wireless telephone 400 peculiar, information acquisition response 23 which includes authentication key and service type is sent back through communication circuit to visitor station in-house switching equipment 200. On one hand, among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only authentication key through communication circuit to visitor station in-house switching equipment 200, is sent back only in case of authentication scenario between switching equipment.

[0041] Like above, according to this embodiment 4, or other effect which also management of comparison every of authentication scenario type can do to other than effect of the embodiment 1 is acquired.

[0042] Embodiment 5. Figure 6 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 5, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With above-mentioned embodiment 1 it had intranetwork switching equipment attribute table 500 beforehand inside the home station in-house switching equipment 100, it showed those which set authentication algorithm type to this, but as shown in the Figure 6, from visitor station in-house switching equipment 200 it is possible to include this authentication algorithm type inside the information acquisition request 22 to home station in-house switching equipment 100.

[0043] In this case, home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when the call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out from the home location register 101, simultaneously, reads out authentication algorithm type from information acquisition request 22 which is received regarding visitor station in-house switching equipment 200.

[0044] Next, home station in-house switching equipment 100,

たビジタ局構内交換機２００の認証演算アルゴリズム種別が、ホーム局構内交換機の保有する認証演算アルゴリズムと同一であれば、携帯無線電話機４００固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号２３をビジタ局構内交換機２００へ通信回線を介して返送する。一方、認証演算アルゴリズム種別が同一でない場合に限り、携帯無線電話機４００固有の情報のうち、認証鍵のみを含まない情報取得応答信号２３をビジタ局構内交換機２００へ通信回線を介して返送する。以上のように、この実施の形態５によれば、実施の形態１と同様の効果が得られる。

【００４５】実施の形態６．図７はこの発明の実施の形態６による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態１と同一であるので、同一符号および内容についての説明を省略する。上記実施の形態６ではビジタ局構内交換機２００からホーム局構内交換機１００への情報取得要求信号２２内に認証演算アルゴリズム種別を含むものを示したが、図７に示すように、情報取得要求信号２２内にビジタ局構内交換機のメーカー種別を含んでもよい。

【００４６】この場合、ビジタ局構内交換機２００から情報取得要求信号２２を受信したホーム局構内交換機１００は、携帯無線電話機４００固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ１０１から読み出すと同時に、受信した情報取得要求信号２２からビジタ局構内交換機２００に関するメーカー種別を読み出す。

【００４７】次に、ホーム局構内交換機１００は、読み出したビジタ局構内交換機２００のメーカー種別がホーム局構内交換機のメーカー種別と同一であれば携帯無線電話機４００固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号２３をビジタ局構内交換機２００へ通信回線を介して返送する。メーカー種別が同一でない場合に限り、携帯無線電話機４００固有の情報のうち、認証鍵のみを含まない情報取得応答信号２３をビジタ局構内交換機２００へ通信回線を介して返送する。以上のように、この実施の形態６によれば、実施の形態２と同様の効果が得られる。

if reading is authentication algorithm type of visitor station in-house switching equipment 200, is same as authentication algorithm which home station in-house switching equipment possesses, radio call sign of portable wireless telephone 400 peculiar, through communication circuit to visitor station in-house switching equipment 200, sends back information acquisition response 23 which includes the authentication key and service type. On one hand, among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only authentication key through communication circuit to visitor station in-house switching equipment 200, is sent back only when authentication algorithm type is not same. Like above, according to this embodiment 5, effect which is similar to the embodiment 1 is acquired.

[0045] Embodiment 6. Figure 7 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 6, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With above-mentioned embodiment 6 those which from visitor station in-house switching equipment 200 include the authentication algorithm type inside information acquisition request 22 to home station in-house switching equipment 100 were shown, but as shown in the Figure 7, it is possible to include manufacturer type of visitor station in-house switching equipment inside the information acquisition request 22.

[0046] In this case, home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when the call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out from the home location register 101, simultaneously, reads out manufacturer type from information acquisition request 22 which is received regarding visitor station in-house switching equipment 200.

[0047] Next, home station in-house switching equipment 100, if reading is manufacturer type of visitor station in-house switching equipment 200 is same as the manufacturer type of home station in-house switching equipment, radio call sign of portable wireless telephone 400 peculiar, through communication circuit to the visitor station in-house switching equipment 200, sends back information acquisition response 23 which includes authentication key and the service type. Among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only the authentication key, through communication circuit to visitor station in-house switching equipment 200,

【0048】実施の形態7. 図8はこの発明の実施の形態7による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態1と同一であるので、同一符号および内容についての説明を省略する。上記実施の形態5ではビタ局構内交換機200からホーム局構内交換機100への情報取得要求信号22内に認証演算アルゴリズム種別を含むものを示したが、図8に示すように情報取得要求信号22内にビタ局構内交換機のスタンダード標準化委員会の第28班のバージョン種別およびメーカ種別を含んでもよい。

【0049】この場合、ビタ局構内交換機200から情報取得要求信号22を受信したホーム局構内交換機100は、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、受信した情報取得要求信号22からビタ局構内交換機200に関するスタンダード標準化委員会の第28班のバージョン情報およびメーカ種別を読み出す。

【0050】次に、ホーム局構内交換機100は、読み出したビタ局構内交換機200のスタンダード標準化委員会の第28班のバージョン種別が第2版でありかつ携帯無線電話機400が第2版で動作するならば、ビタ局構内交換機200は自管用標準認証アルゴリズムを保有しているため携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビタ局構内交換機200へ通信回線を介して返送する。

【0051】一方、携帯無線電話機400が第1版で動作する場合でも、メーカ種別が自己のメーカ種別と一致するなら互いに持つ認証演算アルゴリズムが同一であるため、携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビタ局構内交換機200へ通信回線を介して返送する。これらの条件が一致しない場合に限り、携帯無線電話機400固有の情報のうち、認証鍵のみを含まない情報取得応答信号23をビタ局構内交換機200へ通信回線を介して返送する。以上のように、この実施の形態7によれば、実施の形態3と同様の効果が得られる。

only when manufacturer type is not the same, it sends back. Like above, according to this embodiment 6, effect which is similar to the embodiment 2 is acquired.

[0048] Embodiment 7. Figure 8 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 7, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With above-mentioned embodiment 5 those which from visitor station in-house switching equipment 200 include the authentication algorithm type inside information acquisition request 22 to home station in-house switching equipment 100 were shown, but as shown in the Figure 8, it is possible to include version type and manufacturer type of 28th group of standardization committee of visitor station in-house switching equipment inside information acquisition request 22.

[0049] In this case, home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when the call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out from the home location register 101, simultaneously, reads out version information and manufacturer type of 28th group of standardization committee from information acquisition request 22 which is received regarding the visitor station in-house switching equipment 200.

[0050] Next, as for home station in-house switching equipment 100, reading is version type of 28th group of the standardization committee of visitor station in-house switching equipment 200 to be 2nd edition, at same time portable wireless telephone 400 being 2nd edition, if it operates is, visitor station in-house switching equipment 200 because standard authentication algorithm for self-management is possessed, radio call sign of portable wireless telephone 400 peculiar, through the communication circuit to visitor station in-house switching equipment 200, sends back information acquisition response 23 which includes authentication key and the service type.

[0051] On one hand, portable wireless telephone 400 being 1st edition, if, manufacturer type agrees with the manufacturer type of self even when it operates, because authentication algorithm which it has mutually is same, radio call sign of portable wireless telephone 400 peculiar, information acquisition response 23 which includes authentication key and service type is sent back through communication circuit to the visitor station in-house switching equipment 200. Among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only the

【0052】実施の形態8. 図9はこの発明の実施の形態8による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図であり、図において、広域ローミング認証装置の構成は実施の形態1と同一であるので、同一符号および内容についての説明を省略する。上記実施の形態5ではビジタ局構内交換機200からホーム局構内交換機100への情報取得要求信号22内に認証演算アルゴリズム種別を含むものを示したが、図9に示すように情報取得要求信号22内にビジタ局構内交換機の認証シナリオ種別を含んでもよい。

【0053】この場合、ビジタ局構内交換機200から情報取得要求信号22を受信したホーム局構内交換機100は、携帯無線電話機400固有の呼出符号、認証鍵、サービス情報をホームロケーションレジスタ101から読み出すと同時に、受信した情報取得要求信号22からビジタ局構内交換機200に関する認証シナリオ種別を読み出す。

【0054】次に、ホーム局構内交換機100は、読み出したビジタ局構内交換機200の認証シナリオ種別が、ビジタ局構内交換機200および携帯無線電話機400間の認証シナリオであれば、携帯無線電話機400固有の無線呼出符号、認証鍵、サービス種別を含む情報取得応答信号23をビジタ局構内交換機200へ通信回線150を介して返送する。認証シナリオ種別がホーム局構内交換機間認証シナリオである場合に限り、携帯無線電話機400固有の情報のうち、認証鍵のみを含まない情報取得応答信号23をビジタ局構内交換機200へ通信回線を介して返送する。以上のように、この実施の形態8によれば、実施の形態4と同様の効果が得られる。

【0055】

【発明の効果】以上のように、請求項1記載の発明によれば、ホーム局構内交換機において、携帯無線電話機に関する情

authentication key through communication circuit to visitor station in-house switching equipment 200, is sent back only when these condition do not agree. Like above, according to this embodiment 7, effect which is similar to the embodiment 3 is acquired.

[0052] Embodiment 8. Figure 9 to be sequence chart which shows operating protocol of position registration of the wide area roaming authentication equipment of portable wireless telephone due to this Embodiment of Invention 8, because constitution of the wide area roaming authentication equipment is same as embodiment 1 in figure, explanation concerning the same sign and content is abbreviated. With above-mentioned embodiment 5 those which from visitor station in-house switching equipment 200 include the authentication algorithm type inside information acquisition request 22 to home station in-house switching equipment 100 were shown, but as shown in the Figure 9, it is possible to include authentication scenario type of visitor station in-house switching equipment inside the information acquisition request 22.

[0053] In this case, home station in-house switching equipment 100 which receives information acquisition request 22 from visitor station in-house switching equipment 200, when the call sign of portable wireless telephone 400 peculiar, authentication key and service information are read out from the home location register 101, simultaneously, reads out authentication scenario type from information acquisition request 22 which is received regarding visitor station in-house switching equipment 200.

[0054] Next, home station in-house switching equipment 100, if reading is authentication scenario type of visitor station in-house switching equipment 200, is authentication scenario between visitor station in-house switching equipment 200 and portable wireless telephone 400, radio call sign of portable wireless telephone 400 peculiar, through the communication circuit 150 to visitor station in-house switching equipment 200, sends back information acquisition response 23 which includes authentication key and the service type. Among information of portable wireless telephone 400 peculiar, information acquisition response 23 which does not include only the authentication key through communication circuit to visitor station in-house switching equipment 200, is sent back only when the authentication scenario type is authentication scenario between home station in-house switching equipment. Like above, according to this embodiment 8, effect which is similar to the embodiment 4 is acquired.

[0055]

[Effects of the Invention] Like above, home location register which keeps information regarding portable wireless

報を保持するホームロケーションレジスタと全ビタ局構内交換機の各ビタ局情報種別を設定したビタ局情報種別保持手段とを備え、携帯無線電話機の移動先であるビタ局構内交換機のビタ局情報種別と自己のビタ局情報種別とが同一であれば、携帯無線電話機の移動先であるビタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示するように構成したので、私設総合サービス網内で不要な信号を送受する必要がなく、私設総合サービス網全体のトラフィックを低くすることができるため単位時間当たりに処理できる携帯無線電話機の発着信処理数を増やすことができる効果がある。

【0056】請求項2記載の発明によれば、ビタ局構内交換機において、他のサービスエリア内から自己が分担するサービスエリア内に携帯無線電話機が移動してきたとき、この携帯無線電話機のホーム局構内交換機を識別し、ホーム局構内交換機に対して携帯無線電話機の情報要求し、ホーム局構内交換機において、携帯無線電話機に関する情報をホームロケーションレジスタから読み出すとともに、全ビタ局構内交換機の各ビタ局情報種別を設定したビタ局情報種別保持手段から携帯無線電話機の移動先であるビタ局構内交換機の情報要求し、自己のビタ局情報種別と同一であれば、携帯無線電話機の移動先であるビタ局構内交換機に対して交換機間認証シナリオを実施するか否かを指示するように構成したので、単位時間当たりに処理できる携帯無線電話機の発着信処理数を増やすことができる効果がある。

【0057】請求項3記載の発明によれば、ビタ局構内交換機において、他のサービスエリア内から自己が分担するサービスエリア内に携帯無線電話機が移動してきたとき、この携帯無線電話機のホーム局構内交換機を識別し、ホーム局構内交換機に対して携帯無線電話機の情報取得要求時に、ビタ局情報種別保持手段から携帯無線電話機の移動先であるビタ局構内交換機のビタ局情報種別を要求し、ホーム局構内交換機において、携帯無線電話機に関する情報をホームロケーションレジスタから読み出すと同時に、情報取得要求信号内に含まれた携帯無線電話機の移動先であるビタ局構内交換機に関するビタ局情報種別を検出し、自己のビタ局

telephone according to invention which is stated in Claim 1, in home station in-house switching equipment, visitor station information type grasping means which sets each visitor station information type of all visitor station in-house switching equipment having, Being same as visitor station information type of visitor station in-house switching equipment which is a movement destination of portable wireless telephone and visitor station information type of self we are, As indicated whether or not which executes authentication scenario between switching equipment vis-a-vis visitor station in-house switching equipment which is a movement destination of portable wireless telephone, because it constituted, it is not necessary transmission and reception to do unnecessary signal inside the private common user network, because traffic of private common user network entirety can be made low, there is an effect which can increase number of send/receive processes of portable wireless telephone which can be treated in per unit time.

[0056] In invention which is stated in Claim 2 we depend, In visitor station in-house switching equipment, self portable wireless telephone moved inside service area which division is done from inside other service area time, home station in-house switching equipment of this portable wireless telephone is identified, information of portable wireless telephone is required vis-a-vis home station in-house switching equipment, In home station in-house switching equipment, information regarding portable wireless telephone is read out from home location register as, If information of visitor station in-house switching equipment which is a movement destination of portable wireless telephone from visitor station information type grasping means which sets each visitor station information type of all visitor station in-house switching equipment is required and it is same as the visitor station information type of self, as indicated whether or not which executes the authentication scenario between switching equipment vis-a-vis visitor station in-house switching equipment which is a movement destination of the portable wireless telephone, because it constituted, there is an effect which can increase the number of send/receive processes of portable wireless telephone which can be treated in per unit time.

[0057] In invention which is stated in Claim 3 we depend, In visitor station in-house switching equipment putting, self portable wireless telephone moved inside service area which division is done from inside other service area time, home station in-house switching equipment of this portable wireless telephone is identified, Vis-a-vis home station in-house switching equipment at at time of information acquisition request of portable wireless telephone, visitor station information type of visitor station in-house switching equipment which is a movement destination of portable wireless telephone from visitor station information type grasping means is required. In home station in-house

情報種別と同一であれば、携帯無線電話機の移動先であるビ  
ジタ局構内交換機に対して交換機間認証シナリオを実施する  
か否かを指示するように構成したので、単位時間当たりに処  
理できる携帯無線電話機の発着信処理数を増やすことができ  
る効果がある。

【0058】請求項4記載の発明によれば、ビジタ局情報種  
別保持手段において、網内構内交換機属性テーブルに全ビジ  
タ局構内交換機の認証演算アルゴリズム種別を設定するよう  
に構成したので、単位時間当たりに処理できる携帯無線電話  
機の発着信処理数を増やすことができる効果がある。

【0059】請求項5記載の発明によれば、網内構内交換機  
属性テーブルに全ビジタ局構内交換機のメーカー種別を設定  
するように構成したので、単位時間当たりに処理できる携帯無  
線電話機の発着信処理数を増やすことができる効果がある。

【0060】請求項6記載の発明によれば、網内構内交換機  
属性テーブルに全ビジタ局構内交換機のスタンダード標準化  
委員会の第28班のバージョン種別およびメーカー種別を設定  
するように構成したので、単位時間当たりに処理できる携帯  
無線電話機の発着信処理数を増やすことができる効果がある。

【0061】請求項7記載の発明によれば、網内構内交換機  
属性テーブルに全ビジタ局構内交換機の認証シナリオ種別を  
設定するように構成したので、単位時間当たりに処理できる  
携帯無線電話機の発着信処理数を増やすことができる効果  
がある。

#### 【図面の簡単な説明】

【図1】 この発明の実施の形態1による携帯無線電話機の  
広域ローミング認証装置を示す構成図である。

switching equipment putting, When information regarding  
portable wireless telephone is read out from home location  
register to simultaneously, If visitor station information type  
regarding visitor station in-house switching equipment which is a  
movement destination of portable wireless telephone which is  
included inside information acquisition request is detected and it  
is same as the visitor station information type of self, as  
indicated whether or not which executes authentication  
scenario between switching equipment vis-a-vis visitor station in-  
house switching equipment which is a movement destination of  
portable wireless telephone, because it constituted, there is an  
effect which can increase the number of send/receive processes  
of portable wireless telephone which can be treated in per unit  
time.

[0058] In order to set authentication algorithm type of all visit  
or station in-house switching equipment to intranetwork  
switching equipment attribute table according to the invention  
which is stated in Claim 4, in visitor station information type  
grasping means, because it constituted, there is an effect which  
can increase number of send/receive processes of the portable  
wireless telephone which can be treated in per unit time.

[0059] According to invention which is stated in Claim 5, in ord  
er to set manufacturer type of all visitor station in-house  
switching equipment to intranetwork switching equipment  
attribute table, because it constituted, there is an effect which  
can increase number of send/receive processes of portable  
wireless telephone which can be treated in per unit time.

[0060] According to invention which is stated in Claim 6, in ord  
er to set version type and manufacturer type of 28th group of  
standardization committee of all visitor station in-house  
switching equipment to intranetwork switching equipment  
attribute table, because it constituted, there is an effect  
which can increase number of send/receive processes of portable  
wireless telephone which can be treated in per unit time.

[0061] According to invention which is stated in Claim 7, in ord  
er to set authentication scenario type of all visitor station in-  
house switching equipment to intranetwork switching  
equipment attribute table, because it constituted, there is an  
effect which can increase number of send/receive processes of  
portable wireless telephone which can be treated in per unit time.

#### [Brief Explanation of the Drawing(s)]

[Figure 1] It is a configuration diagram which shows wide area r  
oaming authentication equipment of portable wireless telephone  
due to this Embodiment of Invention 1.

【図 2】 この発明の実施の形態 1 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 3】 この発明の実施の形態 2 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 4】 この発明の実施の形態 3 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 5】 この発明の実施の形態 4 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 6】 この発明の実施の形態 5 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 7】 この発明の実施の形態 6 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 8】 この発明の実施の形態 7 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 9】 この発明の実施の形態 8 による携帯無線電話機の広域ローミング認証装置の位置登録の動作手順を示すシーケンス図である。

【図 10】 特開平 8-237727 号公報に記載された従来の携帯無線電話機の広域ローミング認証装置の概要を示す構成図である。

【図 11】 従来の携帯無線電話機の広域ローミング認証装置の位置登録動作を示すシーケンス図である。

#### 【符号の説明】

100 ホーム局構内交換機、101 ホームロケーションレジスタ、130、230、330 サービスエリア、150

[Figure 2] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 1.

[Figure 3] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 2.

[Figure 4] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 3.

[Figure 5] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 4.

[Figure 6] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 5.

[Figure 7] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 6.

[Figure 8] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 7.

[Figure 9] It is a sequence chart which shows operating protocol of position registration of wide area roaming authentication equipment of the portable wireless telephone due to this Embodiment of Invention 8.

[Figure 10] It is a configuration diagram which shows gist of wide area roaming authentication equipment of conventional portable wireless telephone which is stated in Japan Unexamined Patent Publication Hei 8-237727 disclosure.

[Figure 11] It is a sequence chart which shows position registration actuation of wide area roaming authentication equipment of conventional portable wireless telephone.

#### [Explanation of Reference Signs in Drawings]

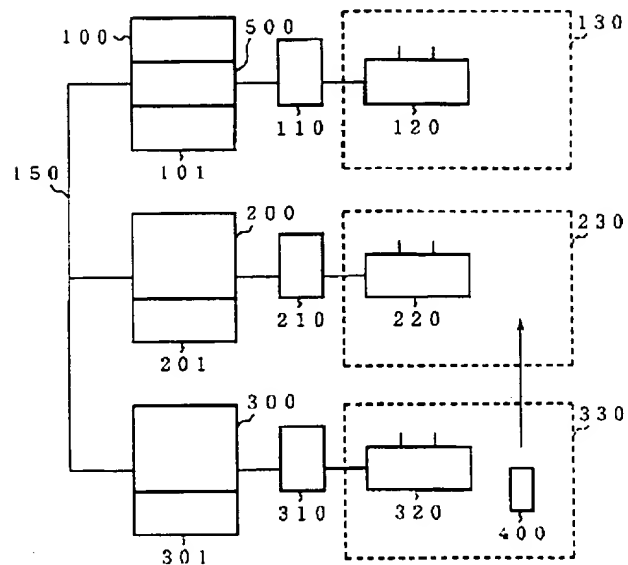
100 home station in-house switching equipment, 101 home location register, 130, 230, 330 service area, 150

通信回線、200、300 ビジタ局構内交換機、400  
携帯無線電話機、500 網内構内交換機属性テーブル

communication circuit, 200, 300 visitor station in-house  
switching equipment, 400 portable wireless telephone and  
500 intranetwork switching equipment attribute table.

【図1】

[Figure 1]

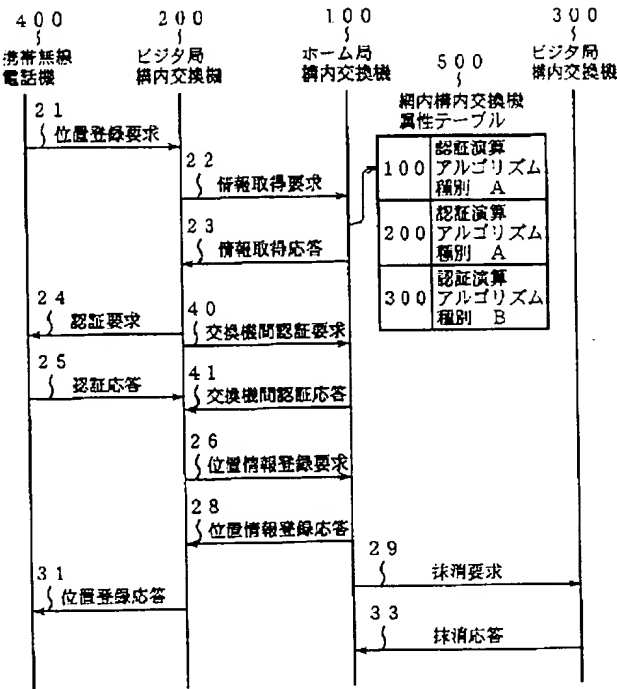


100: ホーム局構内交換機  
101: ホームロケーションレジスタ  
130, 230, 330: サービスエリア  
150: 通信回線  
200, 300: ビジタ局構内交換機  
400: 携帯無線電話機  
500: 網内構内交換機属性テーブル



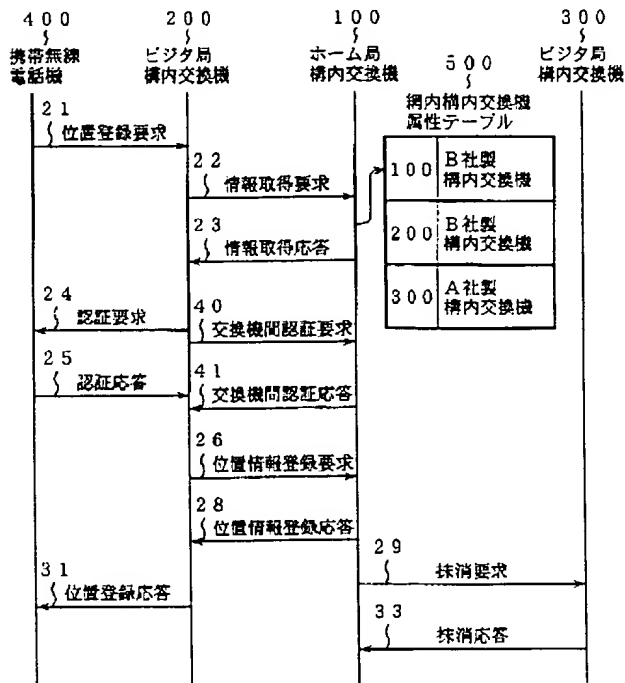
【図 2】

[Figure 2]



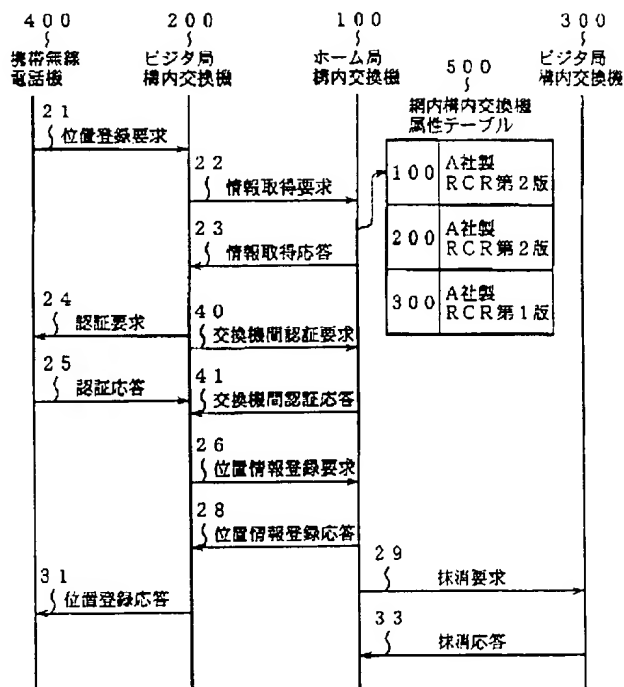
【図 3】

[Figure 3]



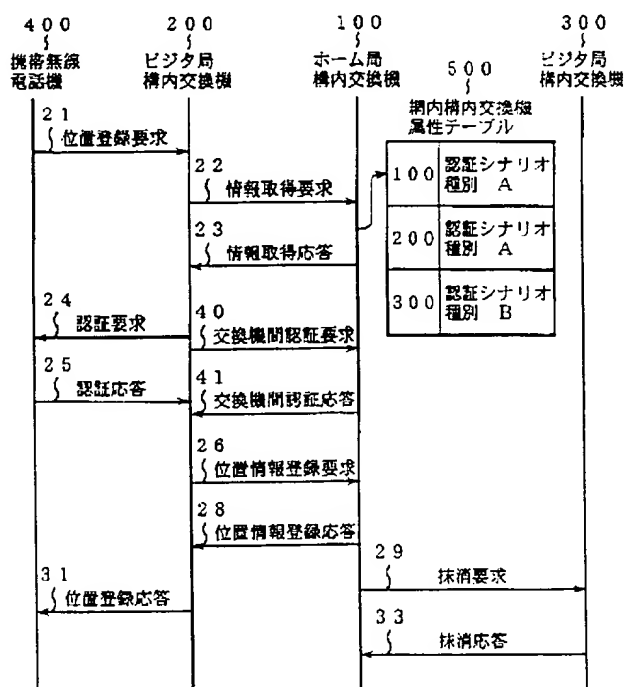
【図 4】

[Figure 4]



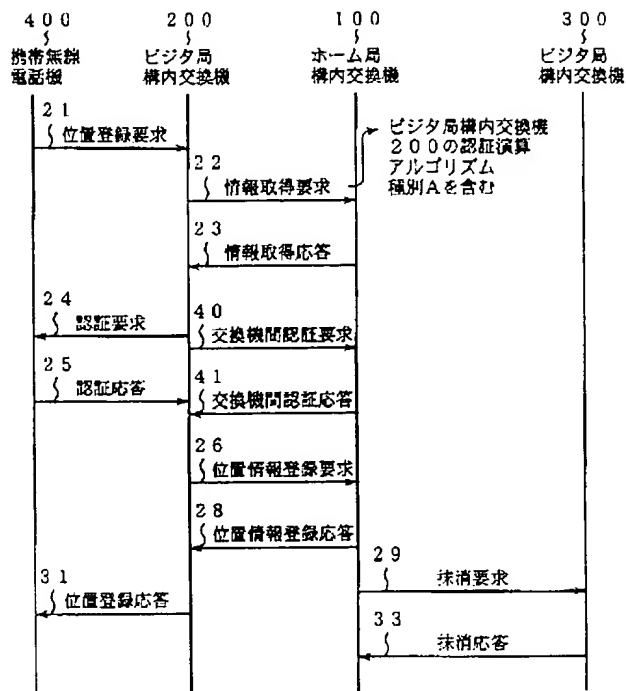
【図 5】

[Figure 5]



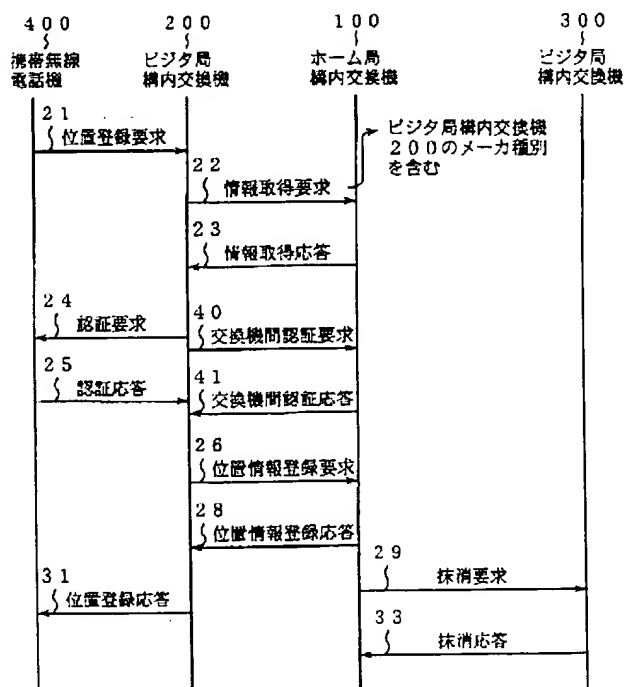
【図 6】

[Figure 6]



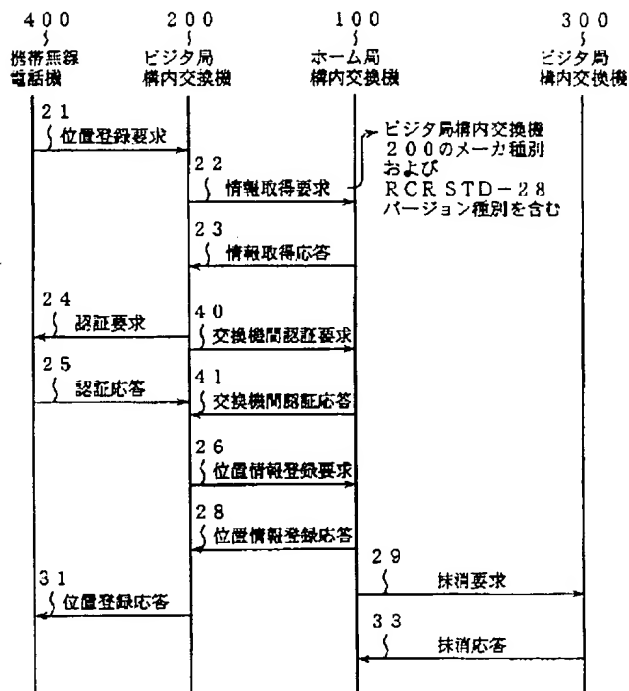
【図 7】

[Figure 7]



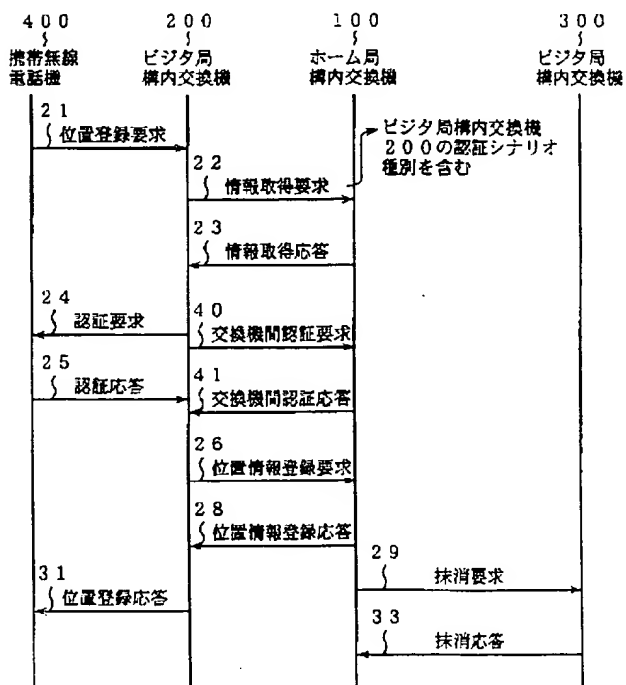
【図 8】

[Figure 8]



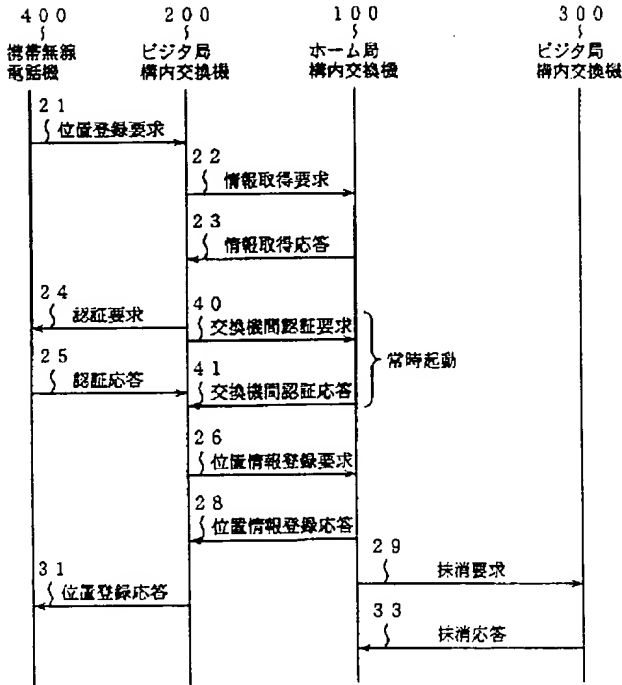
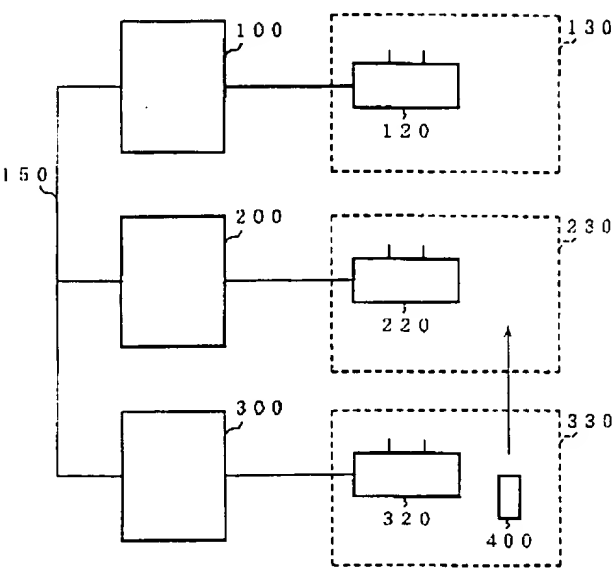
【図 9】

[Figure 9]



【図10】

[Figure 10]



【図11】

[Figure 11]